PRINCE EDWARD ISLAND

ENERGY CORPORATION

ANNUAL REPORT

1986-1987

BOARD OF DIRECTORS

Mr. Norman F. Stewart, Chairman

Mr. Don J. Gillis, Vice-Chairman

Mr. G. Douglas Dennis, Secretary-Treasurer

Mr. Bob Foster

Mr. James Burleigh

Mr. Frank Moran

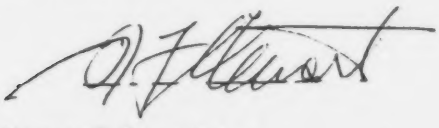
Mr. Doug Cameron

The Honourable Allison Ellis
Minister, Department of Energy & Forestry
P.O. Box 2000
Charlottetown, P.E.I.
C1A 7N8

Dear Mr. Minister:

I have the honour to present to you the attached annual report of the Prince Edward Island Energy Corporation for the year ending March 31, 1987. This report has been prepared and is submitted in accordance with the Energy Corporation Act, Section 10 (1).

Respectfully submitted,



Norman F. Stewart
Chairman of the Board of Directors

1.0 INTRODUCTION

This is the eighth annual report of the P.E.I. Energy Corporation and covers the period April 1, 1986 to March 31, 1987. The Energy Corporation was established by the Energy Corporation Act which was proclaimed on December 9, 1978.

The objectives of the Energy Corporation are to develop and promote energy systems on an economic and efficient basis and to coordinate all government programs in the establishment and application of energy systems in the Province.

The Corporation operates within the general framework of provincial energy policy which is the responsibility of the Minister of Energy & Forestry.

2.0 BOARD OF DIRECTORS

The members of the Board of Directors and their terms of office as of March 31, 1987 were as follows:

Norman F. Stewart, Chairman, March 26, 1987 — March 26, 1990
Don Gillis, Vice Chairman, March 26, 1981 — December 6, 1987
G. Douglas Dennis, Sect'y/Treas., November 9, 1981 — December 6, 1987
Bob Foster, July 10, 1986 — July 10, 1989
James Burleigh, July 10, 1986 — July 10, 1989
Frank Moran, March 26, 1987 — March 26, 1990
Doug Cameron, October 21, 1986 — October 21, 1989

The following Directors retired during the year:

Hon. J. Angus MacLean
Mr. L. Raymond MacKinnon
Mr. Leo Walsh

3.0 STAFF

R.J. Brandon is the General Manager and Dr. John te Raa is the Operations Manager of the Corporation. Because of the increasing responsibilities of the Corporation, particularly in the operation of new district heating systems, a Junior Engineer, David Godkin, was hired on Contract. Mrs. Margaret R. Hughes is the Administrative Assistant for the Corporation.

4.0 SUMMARY OF ACTIVITIES

Oil prices remained low during the year which meant that wood fuel conversion projects had to be examined in the light of much tighter economics. There is also great uncertainty as to what the trend in oil prices will be in the near term. The Corporation continued to view the availability of capital funding under the Federal Government's Alternate Energy Demonstration Program as an excellent opportunity to build up a wood chip fuel industry through the conversion of provincially owned buildings. On the 23rd of February, the Charlottetown Pilot District Heating Project was officially opened by the Premier, the Honourable Joseph Ghiz. This system serves fifteen buildings including the Provincial Administration Building, the

Charlottetown Hotel, and City Hall. The system is expected to displace 1,100,000 liters of fuel oil with 5,000 tonnes of wood chip fuel. The Energy from Waste Plant continued to dispose of the municipal waste generated in the Greater Charlottetown Area. In order to ensure that the combined heating systems of the Hospital and the Energy from Waste Plant were operating at maximum efficiency, an operational review of the two Plants was carried out. The report recommended a number of operational changes and some capital investments that would result in an increase in steam sales to the Hospital and a displacement of imported fuel oil.

The Corporation acted as a wood fuel broker, purchasing 13,190 tonnes of wood fuel during the year and selling it to various institutions including the Kings County Memorial Hospital, the University of P.E.I., and the Prince Edward Home.

Two new projects were initiated during the year. Six wood fired boilers are scheduled to be installed at several large schools and hospitals in Prince County. This project will form the nucleus for a wood fuel industry in this area. A district heating project based on the wood boiler at the University of P.E.I. is being developed to significantly increase the wood fuel volume at this site to about 12,000 tonnes per year. During the period covered by this report, it is estimated that 42,000 tonnes of wood chip fuel and municipal waste replaced 7.2 million liters of imported oil. This resulted in the retention of $1.4 million in the P.E.I. economy that otherwise would have left Prince Edward Island during the year.

4.1 Energy from Waste Plant

The Energy from Waste (EFW) Plant consumed 28,000 metric tonnes of municipal waste in 1986-87 and sold 35,430,000 kg of steam to the Queen Elizabeth Hospital (QEH). This steam is estimated to have displaced about 4 million liters of light fuel oil worth $925,000.

In March, 1986 a request for proposals was issued to select a Consultant to carry out a review of the combined heating plants of both the EFW Plant and the QEH. By optimizing the combined operations, both the Hospital Board and the Corporation anticipate that provincial funds can be saved. The $28,450 study was funded by the Corporation and the study was jointly managed by a committee consisting of Dave Fitzpatrick, Director of Plant, at the QEH and Rob Brandon, the General Manager of the Corporation. Coles Associates carried out the study and the report was submitted to the Corporation in September 1986. A number of operational changes and equipment investments were suggested. These included a thermal storage system at the QEH so that hot water could be heated at night, using steam from the EFW Plant for day time laundry use at the QEH. A number of recommendations to reduce electrical use at the QEH were also made including the possibility of a second steam turbine that would use steam produced at the EFW plant to produce electricity at the QEH. In all, six major recommendations and nine further recommendations were made that would increase the utilization of steam from the EFW Plant and reduce the cost to government of the combined operations of both the EFW Plant and the QEH.

In order to achieve immediate results, two projects with less than a one year payback were initiated. One involved the installation of steam heat exchangers at the QEH boiler plant to keep their boilers on warm standby. The practice has been to fire them with oil to keep them warm. This was expected to cost $22,000 and yield annual savings of $62,000.

The second project involved installing power factor correction equipment at the electrical room at the QEH. This is expected to reduce electrical demand costs by about $500/month. Both of these projects were funded through the Corporation's Renewable Energy Initiatives Program.

In order to reduce the operating costs at the EFW Plant, an offer from Energy, Mines & Resources to assist with the capital cost of a steam turbine with a grant of $155,181 was accepted. Frontier Energy Consultants were retained to develop the terms of reference for the project and tenders were called for a turnkey bid in July. In August, a contract was signed with D.B.&J. (1971) Ltd. for the installation of a 180 KW Westinghouse turbine for a capital cost of $276,400. With anticipated electrical cost savings of $40,000 the project has a simple payback of three years. The unit is expected to be in operation in April, 1987.

The contract with Tricil Limited to operate the EFW Plant is due to expire in April, 1988. Negotiations are continuing between the Corporation and Tricil to extend the contract for two years. The use of an experienced operator for the EFW Plant offers significant advantages to the Corporation in the operation of this unique Plant.

4.2 Renewable Energy Initiatives Program

This program, which was initiated in 1982, was continued in 1986-87. The program funds demonstration projects using energy systems that have not been proven in Prince Edward Island. Projects that received assistance this year under this program included:

Prefabricated Wood Boiler — La Cooperative Forestière
Jet Ice Project — Sherwood Sportsplex
Wind Turbine Assessment — North River Village Commission
Electrical and Thermal Conservation — Queen Elizabeth Hospital

In addition to the projects above, the Renewable Energy Initiatives Program also funded the salary of an Agricultural Engineer to work at the Department of Agriculture on Energy Conservation Projects in the Agricultural Sector.

4.3 Bunbury-Southport Wind Turbine Project

At the request of the Bunbury-Southport Pollution Control Commission, the Agreement between the Corporation and the Commissioners was extended to March 1988 to enable more operating experience to be obtained with the turbine. The payments from Maritime Electric for electric power sales are to be passed through to the Commission who will take on the responsibility for the maintenance of the machine in March 1988. In the period

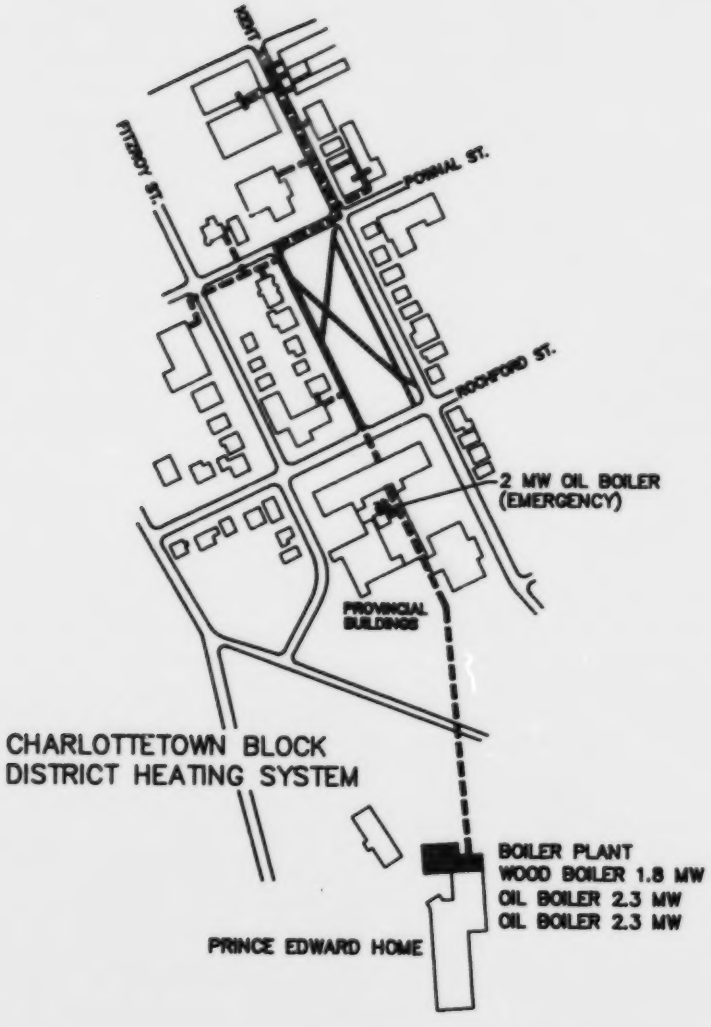

FITZROY ST.
FORBAL ST.
ROCKFORD ST.
2 MW OIL BOILER
(EMERGENCY)
PROVINCIAL
BUILDINGS
CHARLOTTETOWN BLOCK
DISTRICT HEATING SYSTEM
BOILER PLANT
WOOD BOILER 1.8 MW
OIL BOILER 2.3 MW
OIL BOILER 2.3 MW
PRINCE EDWARD HOME

Figure 1

The Prince Edward Home boiler plant showing the steam plume emitted by the wood fuelled boiler as it heats fifteen buildings in Charlottetown. The wood-fired plant is very clean-burning.

Figure 2.

Heat exchangers installed at the Charlottetown Fire Hall. The heat exchangers are supplied by hot water from the Prince Edward Home boiler plant. This hot water then heats the water that circulates through the building by means of this heat exchanger. A second heat exchanger is used to heat domestic hot water.. The heat exchanger's internal system was shipped from Sweden to Georgetown Shipyard who fabricated the steel shells and assembled the units

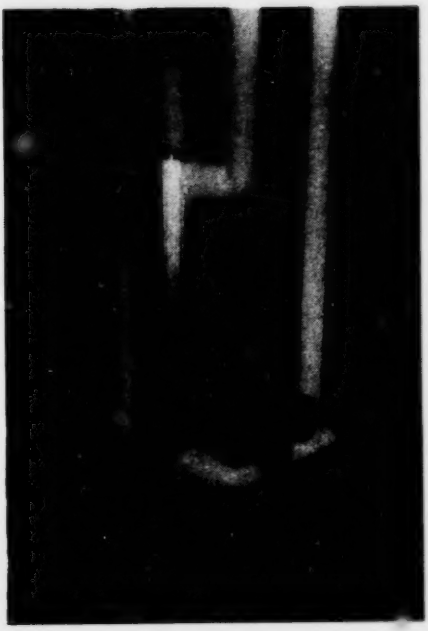


Figure 3.

October 1986 to October 1987 the windmill produced 71,676 kW.h of which 26,614 kW.h was used at the site and 45,062 kW.h was sold to Maritime Electric Co. Ltd.

4.4 Kings County Wood Energy Projects

During the year the 300 KW Northfab wood heating plant at the Montague Junior High School was removed. The unit was rebuilt, refitted with a Sylva Energy System combustion cell and fuel feed system and installed at Morell High School as part of the renovations and expansion undertaken by the Province at that School. Partial funding was obtained through the Federal Alternate Energy Development Program. The capital cost of the system was $126,000 and it is expected to use 300 tonnes of wood per year.

In conjunction with the removal of the wood burning unit at the Montague Junior High School, the Corporation agreed to provide the Unit 4 School Board technical and project management assistance in the building of a wood heating plant at the Senior High School to serve both the Senior and Junior High Schools. The 700 KW heating plant was purchased from Sylva Energy Systems and manufactured by Linkletter Welding of Central Bedeque. The heating plant cost $295,000 and was commissioned in March, 1987. The district heating pipe line is estimated to cost $45,000 and will be installed during the summer of 1987.

The project was financed by Unit 4 School Board with assistance through the Alternate Energy Development Program. The system is estimated to burn 600 tonnes of wood annually.

The Corporation has also provided technical assistance to the Hospital Services Commission regarding a proposed wood heating system at the new Souris Hospital.

4.5 Wood Fuel Supply

The Corporation continues to operate as a wood fuel broker to various institutions in the Province. The Corporation currently has two wood fuel contracts. One is with Larsen's Sawmill for 2,000 tons of chipped slabwood at $25/ton. Due to supply problems, Larsens supplied only 1,000 tonnes during the year. The major contract is with Bulk Carriers PEI Limited, of Cornwall and 12,190 tonnes of wood chip fuel were taken under this contract. Due to startup problems at the University's wood boiler and lower than expected consumption at sites operated by Public Works, the demand for wood fuel was somewhat lower than anticipated. A list of all the major wood fuelled heating plants operating in the Province and their consumption over the year is shown in Table 1.

TABLE 1

MAJOR SITES USING WOOD CHIP FUEL

Location	Wood boiler size (KW)	Annual Wood Fuel Use (tonnes)		*Oil (liters) Displacement	Years of Operation
West					
Wedgewood Manor	400	560		123,200	2
Centre d'Éducation Evangéline	400	630		138,600	2
		1,190		261,800	
Central					
Sleepy Hollow Correctional Centre	400	240		52,800	2
Beach Grove Home	700	470		103,400	1
UPEI/DH	3,800	5,820	(9,000)	1,280,400	Startup 87
Prince Edward Home District heating	2,000	3,900	(5,000)	858,000	2
EFW Plant		190			4
		10,620		2,294,600	
East					
Morell High School	300	100	(300)	24,200	Startup 87
MontagueSr/Jr H.S.	700	—	(600)	—	Startup 87
Kings Co. Mem. Hosp.	900	1,810		398,200	5
Souris Sr.H.S.	500	280	(500)	61,600	1
		2,190		481,800	
Provincial Total		14,000		3,038,200	

*Figures in brackets are expected annual volumes.

In order to accommodate individual homeowners or businesses wishing to chip their own wood supply, the Corporation continues to maintain two small chippers that are available for hire on a daily or weekly basis.

4.6 Pilot District Heating Project

Tenders for the construction of this project were awarded during the winter of 1986. Actual construction of the piping system took place during the summer of 1986 with the major construction in the streets completed prior to the busy tourist season. The system was commissioned during September 1986 and was formally opened by the Premier on February 23, 1987. The capital cost of the project was $750,000 and revenues from district heat customers are as projected. The total project cost including the boiler plant was $1,900,000 A schematic of the system is shown in Figure 1. The boiler plant is located at the Prince Edward Home and consists of a 1.8 MW wood fired boiler and two 2.3 MW oil fired boilers. A photograph of the Plant is shown in Figure 2. The heat exchangers installed in the buildings were built under license from ELGE, a Swedish Firm, by Georgetown Shipyard. The heat exchanger installation at the Charlottetown Fire Hall is shown in Figure 3. From the period October 1, 1986 to March 31, 1987 the system statistics are listed in Table. 2.

TABLE 2

OPERATING STATISTICS

CHARLOTTETOWN PILOT DISTRICT HEATING PROJECT

Total Boiler Plant Output	10,068 MW.h
Wood fuel used	2,542 tonnes
Oil fuel used	617,984 liters

The heat was distributed as follows:

Prince Edward Home	29%
Provincial Administration Buildings	43%
Pilot District Heating Buildings	25%
Pipe losses	3%
	100%

During the year a number of modifications were made to the wood boiler at the Prince Edward Home and the heat exchangers installed in the Provincial Administration Buildings. The wood chip scrape conveyor of the wood boiler was replaced by an auger system under warranty from the Supplier, KMW Inc.

4.7 Special Projects

The Corporation was allocated $600,100 for projects relating to forestry operations on Crown Lands. There were 178 people employed in thinning and clearing activities at 19 sites in all three Counties. The project was managed by the Department of Energy and Forestry on behalf of the Corporation and funds were accounted for under the Provincial Financial Information System.

5.0 PROJECTS UNDER DEVELOPMENT

5.1 West Prince Projects

The public institutions listed in Table 1 show that, with the exception of the Centre d'Éducation Evangèline, there are no wood fired systems west of Summerside. The large Schools of Unit 1, Westisle, Hernewood and M.E. Callaghan seem to offer good potential for conversion. In June, 1986, the General Manager had discussions with the administration of Regional School Unit 1 and the Administrators of the Western and O'Leary Hospitals. Consultants were retained to look at the feasibility of using wood chip fuel at these five sites. Later it was decided to include the O'Leary Elementary School and heat this building and the O'Leary Hospital from one plant. Regional School Unit 2 also asked that Three Oaks High School in Summerside be included in the project. In September, the Consultants' reports

were received and a request for proposals issued to equipment suppliers. In order to reduce costs, a standard prefabricated boiler plant design was specified that would use Island fabrication to the maximum extent possible. By purchasing six plants at a time, the cost per plant could be reduced. The six plants combined are estimated to use 4,000 tonnes per year of wood fuel. Because of the low cost of oil fuel purchased by the School Units, it is anticipated that sawmill residue such as sawdust and chipped slabs at an estimated cost of $25/tonne would be used for this project. The project is approved in principle, pending funding approval under the Alternate Energy Development Program. It is hoped that this project will form the nucleus for a viable wood fuel industry in Prince County.

5.2 U.P.E.I. District Heating Project

Based on the success of the Pilot District Heating Project, the 3.8 MW wood boiler installation at U.P.E.I. was re-examined to determine if the wood fuel use at this site could be significantly increased by adding additional load. Following discussions with the University administration, it did appear that the University would be willing to participate, provided that the University campus could be converted from its 20-year old steam distribution system to a modern hot water system. AFE Engineering carried out a feasibility study in August 1986 that indicated that this conversion would save significant amounts of energy that would permit district heating lines to be installed to connect the Charlottetown Mall, Holland College Royalty Centre, Charlottetown Rural High School and Mount St. Mary's. Also the apartments and senior citizen homes along Belvedere Avenue could be served from the central plant.

Wood fuel use at the University boiler plant was anticipated to increase to about 12,000 tonnes per year. The peak load of the system was estimated to be 13.7 MW and the estimated capital cost was estimated at $4.3 million. Contact was made with the customers to the north of the University who could be connected for the 1987-88 heating season and draft contracts were drawn up for these customers. Because of the low oil prices, no discount on the cost of heating was offered but customers appeared willing to participate because of the anticipated lower cost of maintenance and increased heating system efficiency. In January 1987 the Corporation proceeded to detailed engineering on the first phase of the project which is the conversion of the University Campus and connection of the four northern customers.

On the 10th of March, 1987 the Board of Governors of the University approved the participation of the University in the project. The Corporation would purchase heat from the University and re-sell it to the district heating customers. Also the Corporation would convert the University campus to a hot water distribution system and receive from the University, over five years, the energy savings resulting from this conversion. This would pay for the capital cost of the University conversion. Tenders were issued in mid March with bids due in the first week of April.

In order to get the lowest costs, the Corporation negotiated with several district heating pipe suppliers. The best tender was obtained from Brown Boveri Canada which will supply piping from I.C.Moller, a very well known Danish firm with a good reputation for quality products. The heat exchangers for the project are to be purchased from ELGE and fabricated at Georgetown Shipyard. In order to facilitate a future downtown project the University system was designed to be served from a line extending from a future large scale downtown project.

AUDITORS' REPORT

To the Directors of
Prince Edward Island Energy Corporation

We have examined the balance sheet of Prince Edward Island Energy Corporation as at March 31, 1987 and the statements of income surplus — operating and capital projects for the year then ended. Our examination was made in accordance with generally accepted auditing standards, and accordingly included such tests and other procedures as we considered necessary in the circumstances.

In our opinion, these financial statements present fairly the financial position of the corporation as at March 31, 1987 and the results of its operations for the year then ended in accordance with generally accepted accounting principles applied on a basis consistent with that of the preceding year.

Beaton, Fitzpatrick & Hansen

Beaton, Fitzpatrick & Hansen

July 10, 1987

PRINCE EDWARD ISLAND ENERGY CORPORATION
BALANCE SHEET
FOR THE YEAR ENDING MARCH 31, 1987
ASSETS

	March 31 1987	1986
CURRENT ASSETS		
Cash	$ 239,108	$
Term deposits	3,235	2,725
Accounts receivable	454,140	163,947
Holdback receivable	68,483	27,068
Accrued interest receivable	1,080	264
Project under development	267,253	1,035,229
	1,033,299	1,229,233
OTHER ASSET		
Mortgage receivable (note 1)	9,000	29,000
PROPERTY, PLANT AND EQUIPMENT		
Fixed assets (note 2)	12,010,794	10,079,441
Accumulated depreciation	63,077	
	11,947,717	10,079,441
	$12,990,016	$11,337,674

LIABILITIES AND SURPLUS

CURRENT LIABILITIES		
Bank indebtedness (note 3)	$ 1,398,702	$ 838,648
Accounts payable and accrued liabilities	764,923	549,485
Deferred revenue - projects under development		303,793
Deferred revenue - debt retirement grant	49,903	151,700
Principal due within one year on long-term debt	51,167	
	2,264,695	1,843,626
LONG-TERM DEBT (note 4)	6,623,833	5,500,000
SURPLUS		
Surplus - operating	320,203	279,372
Deficit - capital projects	1,706,354	1,099,808
Capital (note 5)	5,487,639	4,814,484
	4,101,488	3,994,048
	$12,990,016	$11,337,674

PRINCE EDWARD ISLAND ENERGY CORPORATION
STATEMENT OF INCOME AND SURPLUS — OPERATING
FOR THE YEAR ENDED MARCH 31, 1987

	Year ended March 31 1987	1986
Revenues		
Grants Province of Prince Edward Island	$544,396	$641,523
Bunbury Southport Pollution Control Commission	1,526	1,839
Sale of wood	382,681	170,356
Rent of wood chipper (net)	(97)	2,725
	928,506	816,443
Expenses		
Projects	92,314	270,120
Wood	367,479	180,108
Administration		
Audit	4,375	4,027
Bad debts	17,000	
Consulting	189,375	124,885
Director's honorarium	19,487	22,539
Materials and supplies	1,938	2,753
Miscellaneous	9,930	4,668
Office furniture	2,681	2,215
Office supplies	1,736	2,982
Telephone	9,626	4,568
Travel	10,280	9,483
Wages and levies	161,454	158,907
	887,675	787,255
NET INCOME	40,831	29,188
Surplus at beginning of year	279,372	250,184
SURPLUS AT END OF YEAR	$320,203	$279,372

PRINCE EDWARD ISLAND ENERGY CORPORATION
STATEMENT OF INCOME AND DEFICIT
— CAPITAL PROJECTS

	Year ended March 31 1987	1986
Revenues		
Sale of steam	$ 790,585	$1,025,945
Tippage fees	303,008	295,000
Interest and other	2,442	6,155
Sale of scrap metal	653	1,890
	1,096,688	1,328,990
Expenses		
Depreciation	63,077	
Fuel	51,889	
Interest	821,282	724,140
Management	101,376	97,380
Miscellaneous	2,803	2,301
Operations	710,955	775,523
Property taxes	76,376	74,151
	1,827,758	1,673,495
Operating loss	731,070	344,505
Other - debt retirement grant	101,797	
- amortization of capital grant	22,727	
NET LOSS	606,546	344,505
Deficit at beginning of year	1,099,808	755,303
DEFICIT AT END OF YEAR	$1,706,354	$1,099,808

PRINCE EDWARD ISLAND ENERGY CORPORATION
NOTES TO FINANCIAL STATEMENTS
YEAR ENDED MARCH 31, 1987

GENERAL

The corporation is a crown corporation established by the Energy Corporation Act and its principal activities are to develop and promote energy systems.

SUMMARY OF SIGNIFICANT ACCOUNTING POLICIES

Property, plant and equipment

Minor fixed assets are retired out of operating grants and revenues and expensed in the statement of income and surplus — operating in the period of acquisition.

Major fixed assets remaining the property of the Prince Edward Island Energy Corporation are transferred to the fixed asset accounts from projects under development when such projects are complete.

Depreciation has been provided on fixed assets in accordance with principal payments on long-term debt.

1. MORTGAGE RECEIVABLE

	1987	1986
13%, second mortgage, principal and interest due on July 31, 1986 and 1987 and 1/3 of the principal plus interest due on July 1, of the next three years. The mortgage is secured by a wood fuel boiler	$17,000	$17,000
12%, mortgage, payable in equal annual principal installments of $3,000. plus interest. The mortgage is secured by land	9,000	12,000
	26,000	29,000
Less allowance for doubtfuls	17,000	
	$ 9,000	$29,000

2. PROPERTY, PLANT AND EQUIPMENT

	1987			1986
	Cost	Accumulated depreciation	Net	Net
Waste burning plant	$10,079,441	$	$10,079,441	$10,079,441
District heating	1,931,353	63,077	1,868,276	
	$12,010,794	$63,077	$11,947,717	$10,079,441

3. Bank indebtedness is secured by a government guarantee.

4. LONG-TERM DEBT

	1987	1986
12% debenture, payable interest only to 1993 with equal principal and interest installments commencing in 1993 to amortize the balance over a ten year period	$5,500,000	$5,500,000
10 1/4% debenture, payable in principal and interest installments commencing in 1987 to amortize the balance over a ten year period	825,000	
9 1/4% promissory note	350,000	
	6,675,000	5,500,000
Principal included in current liabilities	51,167	Nil
	$6,623,833	$5,500,000

Principal due within each of the next five years on long-term debt is approximately as follows:

1987	51,167
1988	56,390
1989	62,170
1990	68,542
1991	75,568

5. CAPITAL SURPLUS

The corporation has adopted the policy of capitalizing those funds received in financial support of the capital costs of fixed assets. The surplus is being amortized to income on the same method that depreciation is provided on the related assets.

6. COMPARATIVE FIGURES

Certain March 31, 1986 figures have been reclassified to conform to financial statement presentation adopted for the current year.

Comparative figures are based on financial statements which were reported on by the auditors.

ACKNOWLEDGEMENT

The Corporation acknowledges with thanks the contributions made by individuals and organizations within the Federal and Provincial governments and the private sector which have contributed substantially to activities of the Corporation. Without these donated contributions of expertise, criticism and advice the Corporation's activities would have been seriously impaired.